18/11/2015   الإربيري   م. شريب   project-2

$K_a = 0.01$

$A = 1 \ m^2$

$B = 1/2$

$J = 2$

$K_a = 0.01$

$K_b = 0.1$

$K_t = 10$

$L_a = 1$

$R_a = 1$

المطلوب في فلا U و 5 i .ساعح على Controller
(Hardware only) للمحركوت

for $\dfrac{\Theta(s)}{V_a(s)} = \dfrac{K_t}{s(L_a s + R_a)(Js + B) + sK_t \ K_b}$

$T.F. = \dfrac{\Theta(s)}{V_a(s)} * K_a * \dfrac{1}{As}$

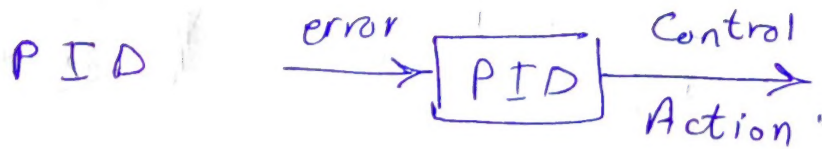$$\boxed{= \dfrac{K_a \ K_t}{As^2(L_a s + R_a)(Js + B) + As^2 K_t K_b}}$$

Task-1

الـ head compensator وز.تة Block Diagram وجرب

Task 2

لنفس القيم، اشتغل بالـ PID

PID $\xrightarrow{\text{error}}$ $\boxed{PID}$ $\xrightarrow{\text{Control}}$ Action

— present

$$c_p = K_p \, e(t) \qquad \text{(Proportional)}$$

— Past

$$c_I = K_i \int e(t) \qquad \binom{\text{Integral}}{\text{stedy state}} \text{(offset)}$$

— Future

$$c_d = K_d \frac{de}{dt} = -K_d \frac{dy}{dt} \qquad \binom{\text{Differential}}{\text{like lead comp.}} \text{(Dynamics)}$$

$$C = C_p + C_i + C_d$$

$$PID = \frac{K_p S + K_i + K_a S^2}{S}$$

task 3

* Integral windup
* Derivative kick $\Big\}$ search for it as PID problem